

Comparing Fractions

Reporting Category Number and Number Sense

Topic Comparing, ordering, and representing fractions

Materials

- Fraction cards (optional)
- Fraction circles or rods (optional)
- A number line from 0 to 1, showing halves, fourths, eighths, fifths, and tenths
- Which Is More? handout (attached)

Vocabulary

fraction, whole, part, numerator, denominator, like denominators, unlike denominators, greater than, less than, equal to, represent

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Review with students the fractions that are equivalent to $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{3}$.
2. Have students compare the following fractions, using fraction circles or fraction rods.
 - a. $\frac{3}{4}$ and $\frac{1}{4}$
 - b. $\frac{1}{8}$ and $\frac{4}{8}$
 - c. $\frac{3}{6}$ and $\frac{1}{6}$

Discuss these problems with the students. Ask, “Could you figure out these problems without fraction circles or rods to help you? If so, how?” Lead students to see that if same-sized pieces are used (if the denominators are the same), then one needs to compare only the numerators.

3. Have students compare the following fractions, using fraction circles or rods.
 - d. $\frac{4}{5}$ and $\frac{4}{8}$
 - e. $\frac{6}{10}$ and $\frac{6}{8}$
 - f. $\frac{3}{5}$ and $\frac{3}{6}$

Discuss these problems with the students. Ask, “Could you figure out these problems without fraction circles or rods to help you? If so, how?” Lead students to see that if the numerators are the same, then one needs to compare only the denominators—i.e., the

larger the denominator, the smaller the piece. Therefore, $\frac{4}{8}$ is less than $\frac{4}{5}$ because the four pieces in $\frac{4}{5}$ are larger than the four pieces in the $\frac{4}{8}$.

4. Have students compare the following fractions, using fraction circles or rods.

g. $\frac{2}{6}$ and $\frac{5}{8}$

h. $\frac{4}{6}$ and $\frac{3}{8}$

i. $\frac{5}{12}$ and $\frac{6}{10}$

Ask, "Could you compare these fractions without using fraction pieces? If so, how?" Lead students to recognize that each of these fractions is close to $\frac{1}{2}$, and that one needs to figure

out which of the fractions is *greater than* and which is *less than* $\frac{1}{2}$. For example, in g,

$\frac{2}{6}$ is $\frac{1}{6}$ *less than* $\frac{1}{2}$, and $\frac{5}{8}$ is $\frac{1}{8}$ *greater than* $\frac{1}{2}$; therefore, $\frac{5}{8}$ is larger than $\frac{2}{6}$.

5. Have students compare the following fractions, using fraction circles or rods.

j. $\frac{3}{4}$ and $\frac{9}{10}$

k. $\frac{8}{9}$ and $\frac{7}{8}$

Ask, "Could you compare these fractions without using fraction pieces? If so, how?" For example, in j, $\frac{3}{4}$ is $\frac{1}{4}$ away from 1, and $\frac{9}{10}$ is $\frac{1}{10}$ away from 1. Use a number line to lead

students to see that the $\frac{1}{10}$ is a smaller distance away from 1 than $\frac{1}{4}$ is, so $\frac{9}{10}$ is larger than $\frac{3}{4}$.

Assessment

• Questions

- Are the following fractions closer to $\frac{1}{2}$ or to 1 whole: $\frac{5}{8}$, $\frac{6}{9}$, $\frac{4}{12}$, $\frac{7}{10}$? How do you know?

• Journal/Writing Prompts

- Compare the fractions $\frac{7}{9}$ and $\frac{3}{8}$ as they are related to 1 whole.
- Put the following fractions in order from least to greatest: $\frac{7}{8}$, $\frac{3}{4}$, $\frac{2}{8}$, $\frac{3}{6}$, $\frac{1}{3}$. Write an explanation of your order.

• Other

- Have students complete the attached Which Is More? handout.

- Circulate during the activity to observe whether students can compare the fractions with the fraction pieces. Also, note their ability to apply the new strategies to the next set of fractions.

Extensions and Connections (for all students)

- Have students write three true statements using the symbols $<$, $>$, or $=$ and any combination of the following fractions: $\frac{2}{3}$, $\frac{3}{8}$, $\frac{1}{4}$, $\frac{6}{10}$, $\frac{6}{12}$.

Which Is More?

Name _____ Date _____

There are several candy bars, cookies, and pizzas for you and your friends to share. However, in each case, you must choose which fractional part you want. Assuming you want the larger portions, work with your partner to find out which fractions are greater in the following fraction pairs. You may not use the procedures of cross multiplication or finding common denominators, nor may you use models or benchmarks. For each pair, circle the fraction that is greater.

1. $\frac{1}{3}$ or $\frac{1}{4}$

3. $\frac{2}{5}$ or $\frac{1}{5}$

2. $\frac{3}{4}$ or $\frac{3}{8}$

4. $\frac{2}{3}$ or $\frac{1}{4}$

What rules or generalizations have you discovered that can help you decide which fraction is greater?

As you continue, write down how you decided which fraction is greater. You may use the rules you created to help you, but you may not use formal procedures.

5. $\frac{4}{5}$ or $\frac{13}{12}$

8. $\frac{1}{3}$ or $\frac{3}{12}$

6. $\frac{5}{6}$ or $\frac{9}{10}$

9. $\frac{6}{4}$ or $\frac{11}{8}$

7. $\frac{17}{8}$ or $\frac{17}{10}$

10. $\frac{4}{3}$ or $\frac{14}{12}$

How I decided which fraction is greater:

When you are done, check over your explanations. Can you find any exceptions to your rules? You may revise your rules and write down any new rules.
